Contents of Volume 91

No. 1. JULY 2001

EDITORIAL

Highlighted Topics series: Signal Transduction in Smooth Muscle
G. Sieck 1

Ventilation-perfusion inhomogeneity increases gas uptake: theoretical modeling of gas exchange
P. J. Peyton, G. J. B. Robinson, and B. Thompson 3

Ventilation-perfusion inhomogeneity increases gas uptake in anesthesia: computer modeling of gas exchange
P. J. Peyton, G. J. B. Robinson, and B. Thompson 10

Effect of ventilation-perfusion inhomogeneity and N_2O on oxygenation: physiological modeling of gas exchange
P. J. Peyton, G. J. B. Robinson, and B. Thompson 17

Effects of isometric training on the elasticity of human tendon structures in vivo
K. Kubo, H. Kanehisa, M. Ito, and T. Fukunaga 26

Physiological consequences of oxygen-dependent chloride binding to hemoglobin
H. D. Prange, J. L. Shoemaker Jr., E. A. Westen, D. G. Horstkotte, and B. Pinshow 33

Gravity effects on regional lung ventilation determined by functional EIT during parabolic flights
I. Frerichs, T. Dudykevych, J. Hinz, M. Bodenstein, G. Hahn, and G. Hellige 39

Assessment of dry heat exchanges in newborns: influence of body position and clothing in SIDS
E. B. Elabbassi, V. Bach, M. Makki, S. Delanaud, F. Telliez, A. Leke, and J.-P. Libert 51

Comparison of a space shuttle flight (STS-78) and bed rest on human muscle function
S. W. Trappe, T. A. Trappe, G. A. Lee, J. J. Widrick, D. L. Costill, and R. H. Fitts 57

Mechanical properties of alveolar epithelial cells in culture
J. C. Berrios, M. A. Schroeder, and R. D. Hubmayr 65

Comparison of OPS imaging and conventional capillary microscopy to study the human microcirculation
K. R. Mathura, K. C. Vollebregt, K. Boer, J. C. De Graaff, D. T. Ubbink, and C. Ince 74

Severe diabetes inhibits resistance exercise-induced increase in eukaryotic initiation factor 2B activity
J. C. Kostyak, S. R. Kimball, L. S. Jefferson, and P. A. Farrell 79

Decreased monocarboxylate transporter 1 in rat soleus and EDL muscles exposed to clenbuterol
T. Kitaura, N. Tsunekawa, and H. Hatta 85

Effect of morning exercise on counterregulatory responses to subsequent, afternoon exercise
P. Galassetti, S. Mann, D. Tate, R. A. Neill, D. H. Wasserman, and S. N. Davis 91

Gender alters impact of hypobaric hypoxia on adductor pollicis muscle performance
C. S. Fulco, P. B. Rock, S. R. Muza, E. Lammi, B. Braun, A. Cymerman, L. G. Moore, and S. F. Lewis 100

Cytokine changes after a marathon race
D. C. Nieman, D. A. Henson, L. L. Smith, A. C. Utter, D. M. Vinci, J. M. Davis, D. E. Kaminsky, and M. Shute 109

Effects of fat adaptation and carbohydrate restoration on prolonged endurance exercise
A. L. Carey, H. M. Staudacher, N. K. Cummings, N. K. Stepto, V. Nikolopoulos, L. M. Burke, and J. A. Hawley 115

Blood-brain barrier permeability during dopamine-induced hypertension in fetal sheep
A. P. Harris, R. Robinson, R. C. Koehler, R. J. Traystman, and C. A. Gleason 123

Role of nitric oxide in the regulation of glucose kinetics in response to endotoxin in dogs
H. S. Moeniralam, F. Sprangers, E. Endert, M. T. Ackermans, J. J. B. Van Lanschot, H. P. Sauerwein, and J. A. Romijn 130

Effects of postural changes and vestibular lesions on diaphragm and rectus abdominis activity in awake cats
L. A. Cotter, H. E. Arendt, J. G. Jasko, C. Sprando, S. P. Cass, and B. J. Yates 137

Interactions of exercise training and lipoic acid on skeletal muscle glucose transport in obese Zucker rats
V. Saengsirisuwan, T. R. Kinnick, M. B. Schmit, and E. J. Henriksen 145

Chamber properties from transmitral flow: prediction of average and passive left ventricular diastolic stiffness
J. B. Lisauskas, J. Singh, A. W. Bowman, and S. J. Kovács 154

Growth hormone pulsatility profile characteristics following acute heavy resistance exercise
B. C. Nindl, W. C. Hymer, D. R. Deaver, and W. J. Kraemer 163

Molecular adaptations in human skeletal muscle to endurance training under simulated hypoxic conditions
M. Vogt, A. Puntschart, J. Geiser, C. Zuleger, R. Billeter, and H. Hoppeler 173

Muscle regeneration during hindlimb unloading results in a reduction in muscle size after reloading
P. E. Mozdziak, P. M. Pulvermacher, and E. Schultz 183

pH heterogeneity in tibial anterior muscle during isometric activity studied by ^{31}P-NMR spectroscopy
C. J. Houtman, A. Heerschap, M. J. Zwarts, and D. F. Stegeman 191

General characteristics of the sigmoidal model equation representing quasi-static pulmonary P-V curves
U. Narusawa 201

Further analysis of transcytosis of free polypeptides and polypeptide-coated nanobeads in rabbit nasal mucosa
D. Cremaschi, S. Dossena, C. Porta, V. Rossi, and M. Pinza 211

Validity of inspiratory and expiratory methods of measuring gas exchange with a computerized system
D. R. Bassett, Jr., E. T. Howley, D. L. Thompson, G. A. King, S. J. Strath, J. E. McLaughlin, and B. B. Parr 218

Gender differences in carbohydrate loading are related to energy intake
M. A. Tarnopolsky, C. Zawada, L. B. Richmond, S. Carter, J. Shearer, T. Graham, and S. M. Phillips 225

Purine salvage to adenine nucleotides in different skeletal muscle fiber types
J. J. Brault and R. L. Terjung 231

Effect of REM sleep on retroglossal cross-sectional area and compliance in normal subjects
J. A. Rowley, C. S. Sanders, B. R. Zahn, and M. S. Badr 239

Effects of 3-day bed rest on physiological responses to graded exercise in athletes and sedentary men
J. Smorawiński, K. Nazar, H. Kaciuba-Uscilko, E. Kamińska, G. Cybulski, A. Kodrzycka, B. Bicz, and J. E. Greenleaf 249

Regulation of skeletal muscle ATP catabolism by AMPD1 genotype during sprint exercise in asymptomatic subjects
B. Norman, R. L. Sabina, and E. Jansson 258

Pronounced effect of minor changes in body temperature on ischemia and reperfusion injury in rat liver
B. H. M. Heijnen, S. Q. van Veen, I. H. Straatsburg, and T. M. van Gulik 265

Role of speed vs. grade in relation to muscle pump function at locomotion onset
D. D. Sheriff and A. L. Hakeman 269

Influences of repetitive muscle contractions with different modes on tendon elasticity in vivo
K. Kubo, H. Kanehisa, Y. Kawakami, and T. Fukunaga 277

Time delay of vagally mediated cardiac baroreflex response varies with autonomic cardiovascular control
C. Keyl, A. Schneider, M. Dambacher, and L. Bernardi 283

Analysis of tracheal mechanics and applications
U. Holzhäuser and R. K. Lambert 290

Dynamic effects of positive-pressure ventilation on canine left ventricular pressure-volume relations
A. Y. Denault, J. Gorcsan III, and M. R. Pinsky 298

Exercise training increases the Ca^{2+} sensitivity of tension in rat cardiac myocytes
G. M. Diffee, E. A. Seversen, and M. M. Titus 309

Ultrasound measurements of fetal breathing movements in the rat
K. Kobayashi, R. P. Lemke, and J. J. Greer 316

Microvascular and interstitial P_{O_2} measurements in rat skeletal muscle by phosphorescence quenching
M. Shibata, S. Ichioka, J. Ando, and A. Kamiya 321

Carotid body denervation in dogs: eupnea and the ventilatory response to hyperoxic hypercapnia
J. R. Rodman, A. K. Curran, K. S. Henderson, J. A. Dempsey, and C. A. Smith 328

Periarticular cancellous bone changes following anterior cruciate ligament injury
G. R. Wohl, R. C. Shymkiw, J. R. Matyas, R. Kloiber, and R. F. Zernicke 336

Adenosine A_1 and A_{2A} receptors modulate sleep state and breathing in fetal sheep
B. J. Koos, T. Maeda, and C. Jan 343

Effects of *Pseudomonas aeruginosa* endotoxin on vasodilation in the intact spinotrapezius muscle
H. Suzuki, H. Ikezaki, R. Chandiwala, D. Hong, and I. Rubinstein 351

Gender differences in leucine, but not lysine, kinetics
L. S. Lamont, A. J. McCullough, and S. C. Kalhan 357

Flow-mediated release of nitric oxide in isolated, perfused rabbit lungs
T. Ogasa, H. Nakano, H. Ide, Y. Yamamoto, N. Sasaki, S. Osanai, Y. Akiba, K. Kikuchi, and J. Iwamoto 363

Role of intrinsic airway neurons in ozone-induced airway hyperresponsiveness in ferret trachea
Z.-X. Wu, D. F. Maize, Jr., B. E. Satterfield, D. G. Frazer, J. S. Fedan, and R. D. Dey 371

Expression of heme oxygenase in the oxygen-sensing regions of the rostral ventrolateral medulla
E. Mazza, S. Thakkar-Varia, C. A. Tozzi, and J. A. Neubauer 379

Validity of estimating limb muscle volume by bioelectrical impedance
M. Miyatani, H. Kanehisa, Y. Masuo, M. Ito, and T. Fukunaga 386

Respiratory abdominal muscle recruitment and chest wall motion in myotonic muscular dystrophy
V. Ugalde, S. Walsh, R. T. Abresch, H. W. Bonekat, and E. Breslin 395

Dynamic ventilatory response to CO_2 in congestive heart failure patients with and without central sleep apnea
Z. L. Topor, L. Johannson, J. Kasprzyk, and J. E. Remmers 408

Maximal and submaximal forces of slow fibers in human soleus after bed rest
K. Yamashita-Goto, R. Okuyama, M. Honda, K. Kawasaki, K. Fujita, T. Yamada, I. Nonaka, Y. Ohira, and T. Yoshioka 417

Leukocyte counts and lymphocyte responsiveness associated with repeated bouts of strenuous endurance exercise
O. Ronsen, B. K. Pedersen, T. R. Øritsland, R. Bahr, and J. Kjeldsen-Kragh 425

Impaired distensibility of the left ventricle after stiffening of the right ventricle
M. Shirakabe, S. Yamaguchi, Y. Tamada, G. Baniya, A. Fukui, H. Miyawaki, and H. Tomoike 435

Lower inflection point and recruitment with PEEP in ventilated patients with acute respiratory failure
M. Mergoni, A. Volpi, C. Bricchi, and A. Rossi 441

Ambulatory estimates of maximal aerobic power from foot-ground contact times and heart rates in running humans
P. G. Weyand, M. Kelly, T. Blackadar, J. C. Darley, S. R. Oliver, N. E. Ohlenbusch, S. W. Joffe, and R. W. Hoyt 451

α-Actin: disposition, quantities, and estimated effects on lung recoil and compliance
E. H. Oldmixon, K. Carlsson, C. Kuhn, III, J. P. Butler, and F. G. Hoppin, Jr. 459

INVITED EDITORIAL

Exhaled NO: first, hold your breath
J. T. Sylvester and S. Permutt 474

INNOVATIVE TECHNIQUES

A single-breath technique with variable flow rate to characterize nitric oxide exchange dynamics in the lungs
N. M. Tsoukias, H.-W. Shin, A. F. Wilson, and S. C. George 477

HIGHLIGHTED TOPICS

Signal Transduction in Smooth Muscle

Invited Review: Significance of spatial and temporal heterogeneity of calcium transients in smooth muscle
C. M. Pabelick, G. C. Sieck, and Y. S. Prakash 488

Invited Review: Regulation of myosin phosphorylation in smooth muscle
G. Pfitzer 497

Commentary on Selected Contributions
G. Sieck 504

Selected Contribution: Airway caliber in healthy and asthmatic subjects: effects of bronchial challenge and deep inspirations
A. Jensen, H. Atileh, B. Suki, E. P. Ingenito, and K. R. Lutchen 506

Selected Contribution: Effect of volatile anesthetics on cADP-ribose-induced Ca^{2+} release system
E. N. Chini 516

Selected Contribution: NO released to flow reduces myogenic tone of skeletal muscle arterioles by decreasing smooth muscle Ca^{2+} sensitivity
Z. Ungvari and A. Koller 522

LETTERS TO THE EDITOR

Central Neuronal Fatigue in Multiple Sclerosis
M. Bodor 528

Interpreting $\dot{V}o_2$ Kinetics in Heavy Exercise
R. L. Hughson, M. J. MacDonald, and M. E. Tschakovsky; A. M. Jones, M. Burnley, H. Carter, and J. H. Doust 530

No. 2. AUGUST 2001

INVITED EDITORIAL

Invited editorial on "Myogenic satellite cells: Physiology to molecular biology"
E. Spangenburg and F. Booth 533

INVITED REVIEW

Myogenic satellite cells: physiology to molecular biology
T. J. Hawke and D. J. Garry 534

Adenosine A_1 receptors mediate plasma exudation from the oral mucosa
I. Rubinstein, R. Chandilawa, S. Dagar, D. Hong, and X.-P. Gao 552

Cardiovascular responses to three simple, provocative tests of autonomic activity in sleeping infants
C. Harrington, T. Kirjavainen, A. Teng, and C. E. Sullivan 561

Selective muscle hypertrophy, changes in EMG and force, and serum hormones during strength training in older women
K. Häkkinen, A. Pakarinen, W. J. Kraemer, A. Häkkinen, H. Valkeinen, and M. Alen 569

Neck muscle vibration disrupts steering of locomotion
M. Bove, M. Diverio, T. Pozzo, and M. Schieppati 581

Mechanical stretch promotes alveolar epithelial type II cell differentiation
J. Sanchez-Esteban, L. A. Cicchiello, Y. Wang, S.-W. Tsai, L. K. Williams, J. S. Torday, and L. P. Rubin 589

Dopamine-1 receptor stimulation attenuates the vasoconstrictive response to gut ischemia
J. A. Guzman, A. E. Rosado, and J. A. Kruse 596

Hypoxic metabolic response of the golden-mantled ground squirrel
R. C. H. Barros, M. E. Zimmer, L. G. S. Branco, and W. K. Milsom 603

Contribution of CD54 to human eosinophil and neutrophil superoxide production
S. Takashi, Y. Okubo, and S. Horie 613

Women at altitude: short-term exposure to hypoxia and/or α_1-adrenergic blockade reduces insulin sensitivity
B. Braun, P. B. Rock, S. Zamudio, G. E. Wolfel, R. S. Mazzeo, S. R. Muza, C. S. Fulco, L. G. Moore, and G. E. Butterfield 623

Intracellular P_{O_2} decreases with increasing stimulation frequency in contracting single *Xenopus* muscle fibers
R. A. Howlett and M. C. Hogan 632

Effects of hypergravity and anti-G suit pressure on intraregional ventilation distribution during VC breaths
P. M. Gustafsson, O. Eiken, and M. Grönkvist 637

Cardiac atrophy after bed rest and spaceflight
M. A. Perhonen, F. Franco, L. D. Lane, J. C. Buckey, C. G. Blomqvist, J. E. Zerwekh, R. M. Peshock, P. T. Weatherall, and B. D. Levine 645

Exogenous carbohydrate oxidation from drinks ingested during prolonged exercise in a cold environment in humans
S. D. R. Galloway, S. A. Wootton, J. L. Murphy, and R. J. Maughan 654

Severity of contraction-induced injury is affected by velocity only during stretches of large strain
S. V. Brooks and J. A. Faulkner 661

An inexpensive meter to measure differences in electrical resistance in the rat vagina during the ovarian cycle
S. D. Ramos, J. M. Lee, and J. D. Peuler 667

Effect of contraction frequency on leg blood flow during knee extension exercise in humans
B. D. Hoelting, B. W. Scheuermann, and T. J. Barstow 671

Acute exercise effect on postabsorptive serum leptin
J. S. Fisher, R. E. Van Pelt, O. Zinder, M. Landt, and W. M. Kohrt 680

Reduced lipoprotein lipase activity in postural skeletal muscle during aging
L. Bey, E. Areiqat, A. Sano, and M. T. Hamilton 687

Insight into skeletal muscle mechanotransduction: MAPK activation is quantitatively related to tension
L. C. Martineau and P. F. Gardiner 693

Inhibition of nitric oxide synthesis attenuates thermally induced asthma
C. Kotaru, M. Skowronski, A. Coreno, and E. R. McFadden, Jr. 703

Ventilatory long-term facilitation in unanesthetized rats
E. B. Olson, Jr., C. J. Bohne, M. R. Dwinell, A. Podolsky, E. H. Vidruk, D. D. Fuller, F. L. Powell, and G. S. Mitchel 709

Multiple firing of single muscle vasoconstrictor neurons during cardiac dysrhythmias in human heart failure
M. Elam and V. Macefield 717

Ozone absorption in the human nose during unidirectional airflow
L. Y. Santiago, M. C. Hann, A. Ben-Jebria, and J. S. Ultman 725

Validation of equilibration and chromium reduction methods for deuterium measurements of fluid volumes
T. Hedestig, A. Ebberyd, and S. G. E. Lindahl 733

Hysteresivity of the lung and tissue strip in the normal rat: effects of heterogeneities
H. Sakai, E. P. Ingenito, R. Mora, S. Abbay, F. S. A. Cavalcante, K. R. Lutchen, and B. Suki 737

Extracellular glutathione inhibits oxygen-induced permeability changes in alveolar epithelial monolayers
J. H. Roum, A. S. Aledia, L. A. Carungcong, K.-J. Kim, and Z. Borok 748

Fenfluramine-induced pulmonary vasoconstriction: role of serotonin receptors and potassium channels
S. Bělohlávková, J. Šimák, A. Kokešová, O. Hniličková, and V. Hampl 755

Human breath isoprene and its relation to blood cholesterol levels: new measurements and modeling
T. Karl, P. Prazeller, D. Mayr, A. Jordan, J. Rieder, R. Fall, and W. Lindinger 762

TGF-β_1 and prepro-ANP mRNAs are differentially regulated in exercise-induced cardiac hypertrophy
A. Calderone, R. J. L. Murphy, J. Lavoie, F. Colombo, and L. Béliveau 771

Multiple rostral medullary nuclei can influence breathing in awake goats
J. M. Wenninger, L. G. Pan, P. Martino, L. Geiger, M. Hodges, A. Serra, T. R. Feroah, and H. V. Forster 777

Simulated microgravity upregulates an endothelial vasoconstrictor prostaglandin
D. S. Sangha, S. Han, and R. E. Purdy 789

Liquid transport properties of porcine tracheal epithelium
A. Crews, A. E. Taylor, and S. T. Ballard 797

Respiratory mechanics and lung histology in normal rats anesthetized with sevoflurane
F. C. F. Correa, P. B. Ciminelli, H. Falcão, B. J. C. Alcântara, R. S. Contador, A. S. Medeiros, W. A. Zin, and P. R. M. Rocco 803

Mechanical ventilation of isolated septic rat lungs: effects on surfactant and inflammatory cytokines
T. Nakamura, J. Malloy, L. McCaig, L.-J. Yao, M. Joseph, J. Lewis, and R. Veldhuizen 811

Activation of the arousal response can impair performance on a simple motor task
J. T. Noteboom, M. Fleshner, and R. M. Enoka 821

Effect of glutamine and protein supplementation on exercise-induced decreases in salivary IgA
K. Krzywkowski, E. W. Petersen, K. Ostrowski, H. Link-Amster, J. Boza, J. Halkjaer-Kristensen, and B. K. Pedersen 832

Addition of protein and amino acids to carbohydrates does not enhance postexercise muscle glycogen synthesis
R. L. P. G. Jentjens, L. J. C. van Loon, C. H. Mann, A. J. M. Wagenmakers, and A. E. Jeukendrup 839

Effects of exhaustive endurance exercise on pulmonary gas exchange and airway function in women
T. J. Wetter, C. M. St. Croix, D. F. Pegelow, D. A. Sonetti, and J. A. Dempsey 847

Mechanical output impedance of the lung determined from cardiogenic oscillations
E. Bijaoui, P. F. Baconnier, and J. H. T. Bates 859

Exercise induces gastric ischemia in healthy volunteers: a tonometry study
J. A. Otte, E. Oostveen, R. H. Geelkerken, A. B. J. Groeneveld, and J. J. Kolkman 866

Sequential hyperglycemic-euglycemic clamp to assess β-cell and peripheral tissue: studies in female athletes
A. S. Ryan, D. C. Muller, and D. Elahi 872

Frequency characteristics of lung tissue strip during passive stretch and induced pneumoconstriction
P. V. Romero, W. A. Zin, and J. Lopez-Aguilar 882

Effect of L-NAME on oxygen uptake kinetics during heavy-intensity exercise in the horse
C. A. Kindig, P. McDonough, H. H. Erickson, and D. C. Poole 891

Modulation of laryngeal and respiratory pump muscle activities with upper airway pressure and flow
M. H. Stella and S. J. England 897

Laryngeal muscle response to phasic and tonic upper airway pressure and flow
M. H. Stella and S. J. England 905

Mechanical stimulation induces pp125^{FAK} and pp60^{src} activity in an in vivo model of trabecular bone formation
M. R. Moalli, S. Wang, N. J. Caldwell, P. V. Patil, and C. R. Maynard 912

Chronic airway infection leads to angiogenesis in the pulmonary circulation
N. Hopkins, E. Cadogan, S. Giles, and P. McLoughlin 919

INNOVATIVE TECHNIQUES

Improved analysis of brachial artery ultrasound using a novel edge-detection software system
R. J. Woodman, D. A. Playford, G. F. Watts, C. Cheetham, C. Reed, R. R. Taylor, I. B. Puddey, L. J. Beilin, V. Burke, T. A. Mori, and D. Green 929

HIGHLIGHTED TOPICS

Signal Transduction in Smooth Muscle

Historical perspective on airway smooth muscle: the saga of a frustrated cell
C. Y. Seow and J. J. Fredberg 938

Invited Review: Cross-bridge regulation by thin filament-associated proteins
K. G. Morgan and S. S. Gangopadhyay 953

Invited Review: Focal adhesion and small heat shock proteins in the regulation of actin remodeling and contractility in smooth muscle
W. T. Gerthoffer and S. J. Gunst 963

Invited Review: Arteriolar smooth muscle mechanotransduction: Ca^{2+} signaling pathways underlying myogenic reactivity
M. A. Hill, H. Zou, S. J. Potocnik, G. A. Meininger, and M. J. Davis 973

Commentary on Selected Contributions
G. Sieck 984

Selected Contribution: Time course and heterogeneity of contractile responses in cultured human airway smooth muscle cells
B. Fabry, G. N. Maksym, S. A. Shore, P. E. Moore, R. A. Panettieri, Jr., J. P. Butler, and J. J. Fredberg 986

Selected Contribution: Tryptase-induced PAR-2-mediated Ca^{2+} signaling in human airway smooth muscle cells
P. Berger, J. M. Tunon-De-Lara, J.-P. Savineau, and R. Marthan 995

Selected Contribution: Effects of ischemia-reperfusion on vascular contractility and α_1-adrenergic-receptor signaling in the rat tail artery
T. M. Seasholtz, G. Cai, H.-Y. Wang, and E. Friedman 1004

LETTERS TO THE EDITOR

Look Before You Leap
P. Greenhaff; W. Willis, J. McMillen, and C. Donovan 1011

Efficiency After Altitude Acclimatization
D. Böning; H. J. Green 1014

No. 3. SEPTEMBER 2001

INVITED REVIEW

Energy-sensing and signaling by AMP-activated protein kinase in skeletal muscle
W. W. Winder 1017

Inflammatory and mechanical factors of allergen-induced bronchoconstriction in mild asthma and rhinitis
E. Crimi, M. Milanese, S. Oddera, C. Mereu, G. A. Rossi, A. Riccio, G. W. Canonica, and V. Brusasco 1029

On the functional consequences of bronchial basement membrane thickening
M. Milanese, E. Crimi, A. Scordamaglia, A. Riccio, R. Pellegrino, G. W. Canonica, and V. Brusasco 1035

Effects of acute creatine monohydrate supplementation on leucine kinetics and mixed-muscle protein synthesis
G. Parise, S. Mihic, D. Maclennan, K. E. Yarasheski, and M. A. Tarnopolsky 1041

Maximal aerobic capacity across age in healthy Hispanic and Caucasian women
B. C. Schiller, Y. G. Casas, C. A. Desouza, and D. R. Seals 1048

Hyperthermia and central fatigue during prolonged exercise in humans
L. Nybo and B. Nielsen 1055

Elevating dietary salt exacerbates hyperpnea-induced airway obstruction in guinea pigs
T. D. Mickleborough, R. W. Gotshall, J. Rhodes, A. Tucker, and L. Cordain 1061

Phagocytic function in cyclists: correlation with catecholamines and cortisol
E. O. Rincón, J. M. Marchena, J. J. García, A. Schmidt, T. Schulz, I. Malpica, A. B. Rodríguez, C. Barriga, H. Michna, and H. Lötzerich 1067

Regulation of muscle GLUT-4 transcription by AMP-activated protein kinase
D. Zheng, P. S. Maclean, S. C. Pohnert, J. B. Knight, A. L. Olson, W. W. Winder, and G. L. Dohm 1073

Effect of mechanical deformation of neutrophils on their CD18/ICAM-1-dependent adhesion
G. J. Anderson, W. T. Roswit, M. J. Holtzman, J. C. Hogg, and S. F. Van Eeden 1084

Hindlimb unweighting decreases endothelium-dependent dilation and eNOS expression in soleus not gastrocnemius
C. R. Woodman, W. G. Schrage, J. W. E. Rush, C. A. Ray, E. M. Price, E. M. Hasser, and M. H. Laughlin 1091

Effects of acute exercise on the gluconeogenic capacity of periportal and perivenous hepatocytes
F. Désy, Y. Burelle, P. Bélanger, M. Gascon-Barré, and J.-M. Lavoie 1099

Nitric oxide synthase inhibition does not affect the exercise-induced arterial hypoxemia in Thoroughbred horses
M. Manohar, T. E. Goetz, and A. S. Hassan 1105

"Living high-training low" altitude training improves sea level performance in male and female elite runners
J. Stray-Gundersen, R. F. Chapman, and B. D. Levine 1113

Role of airway nitric oxide on the regulation of pulmonary circulation by carbon dioxide
Y. Yamamoto, H. Nakano, H. Ide, T. Ogasa, T. Takahashi, S. Osanai, K. Kikuchi, and J. Iwamoto 1121

Homeokinesis and short-term variability of human airway caliber
C.-L. Que, C. M. Kenyon, R. Olivenstein, P. T. Macklem, and G. N. Maksym 1131

Muscarinic excitation-contraction coupling mechanisms in tracheal and bronchial smooth muscles
L. J. Janssen, J. Wattie, H. Lu-Chao, and T. Tazzeo 1142

Measurement of cell microrheology by magnetic twisting cytometry with frequency domain demodulation
M. Puig-De-Morales, M. Grabulosa, J. Alcaraz, J. Mullol, G. N. Maksym, J. J. Fredberg, and D. Navajas 1152

Leukotriene B_4 promotes reactive oxidant generation and leukocyte adherence during acute hypoxia
D. R. S. Steiner, N. C. Gonzalez, and J. G. Wood 1160

Effects of a 12-wk resistance exercise program on skeletal muscle strength in children with burn injuries
O. E. Suman, R. J. Spies, M. M. Celis, R. P. Mlcak, and D. N. Herndon 1168

Skeletal muscle capillarity and angiogenic mRNA levels after exercise training in normoxia and chronic hypoxia
I. M. Olfert, E. C. Breen, O. Mathieu-Costello, and P. D. Wagner 1176

Airway stability and heterogeneity in the constricted lung
R. C. Anafi and T. A. Wilson 1185

Downregulation of nitric oxide in the brain of mice during their hypoxic preconditioning
G.-W. Lu and H.-Y. Liu 1193

Automated quantification of sympathetic beat-by-beat activity, independent of signal quality
J. W. Hamner and J. A. Taylor 1199

Effect of short-term microgravity and long-term hindlimb unloading on rat cardiac mass and function
C. A. Ray, M. Vasques, T. A. Miller, M. K. Wilkerson, and M. D. Delp 1207

Effects of bright light and melatonin on sleep propensity, temperature, and cardiac activity at night
H. J. Burgess, T. Sletten, N. Savic, S. S. Gilbert, and D. Dawson 1214

Effect of lymphatic outflow pressure on lymphatic albumin transport in humans
J. Wu and G. W. Mack 1223

Increased renal tubular sodium reabsorption during exercise-induced hypervolemia in humans
K. Nagashima, J. Wu, S. A. Kavouras, and G. W. Mack 1229

Glucose uptake and metabolic stress in rat muscles stimulated electrically with different protocols
R. Aslesen, E. M. L. Engebretsen, J. Franch, and J. Jensen 1237

Decreased neuronal excitability in hippocampal neurons of mice exposed to cyclic hypoxia
X. Q. Gu and G. G. Haddad 1245

LH secretion and testosterone concentrations are blunted after resistance exercise in men
B. C. Nindl, W. J. Kraemer, D. R. Deaver, J. L. Peters, J. O. Marx, J. T. Heckman, and G. A. Loomis 1251

Effect of race and resistance training status on the density of fat-free mass and percent fat estimates
M. L. Millard-Stafford, M. A. Collins, C. M. Modlesky, T. K. Snow, and L. B. Rosskopf 1259

Effect of Rho-kinase inhibition on vasoconstriction in the penile circulation
T. M. Mills, K. Chitaley, C. J. Wingard, R. W. Lewis, and R. C. Webb 1269

New method of cardiac output measurement using ultrasound velocity dilution in rats
N. Veal, F. Moal, J. Wang, E. Vuillemin, F. Oberti, E. Roy, M. Kaassis, R. Trouvé, J.-L. Saumet, and P. Calès 1274

Exercise training alters the effect of chronic hypoxia on myocardial adrenergic and muscarinic receptor number
F. Favret, K. K. Henderson, R. L. Clancy, J.-P. Richalet, and N. C. Gonzalez 1283

Genetic selection of mice for high voluntary wheel running: effect on skeletal muscle glucose uptake
C. L. Dumke, J. S. Rhodes, T. Garland Jr, E. Maslowski, J. G. Swallow, A. C. Wetter, and G. D. Cartee 1289

Mortality after carotid body denervation in rats
A. Serra, D. Brozoski, N. Hedin, R. Franciosi, and H. V. Forster 1298

Muscle activity in the leg is tuned in response to ground reaction forces
J. M. Wakeling, V. Von Tscharner, B. M. Nigg, and P. Stergiou 1307

Effects of human eosinophil granule-derived cationic proteins on C-fiber afferents in the rat lung
L.-Y. Lee, Q. Gu, and G. J. Gleich 1318

Humidity does not affect central nervous system oxygen toxicity
R. Arieli and Y. Moskovitz 1327

Evidence of LPL gene-exercise interaction for body fat and LPL activity: the HERITAGE Family Study
C. Garenc, L. Pérusse, J. Bergeron, J. Gagnon, Y. C. Chagnon, I. B. Borecki, A. S. Leon, J. S. Skinner, J. H. Wilmore, D. C. Rao, and C. Bouchard 1334

Normalized force, activation, and coactivation in the arm muscles of young and old men
C. S. Klein, C. L. Rice, and G. D. Marsh 1341

β_1-Subunit of BK channels regulates arterial wall $[Ca^{2+}]$ and diameter in mouse cerebral arteries
M. Löhn, B. Lauterbach, H. Haller, O. Pongs, F. C. Luft, and M. Gollasch 1350

Angiotensin-converting enzyme genotype and physical performance during US Army basic training
L. A. Sonna, M. A. Sharp, J. J. Knapik, M. Cullivan, K. C. Angel, J. F. Patton, and C. M. Lilly 1355

Total weak acid concentration and effective dissociation constant of nonvolatile buffers in human plasma
P. D. Constable 1364

Tryptase and agonists of PAR-2 induce the proliferation of human airway smooth muscle cells
P. Berger, D.-W. Perng, H. Thabrew, S. J. Compton, J. A. Cairns, A. R. McEuen, R. Marthan, J.-M. Tunon De Lara, and A. F. Walls 1372

Mechanism of inhibition of matrix metalloproteinase-9 induction by NO in vascular smooth muscle cells
M. V. Gurjar, J. DeLeon, R. V. Sharma, and R. C. Bhalla 1380

Distribution and colocalization of neurotransmitters and receptors in the pre-Bötzinger complex of rats
Y.-Y. Liu, G. Ju, and M. T. T. Wong-Riley 1387

Efficacy of nasal strip and furosemide in mitigating EIPH in Thoroughbred horses
C. A. Kindig, P. McDonough, G. Fenton, D. C. Poole, and H. H. Erickson 1396

Regulation of vocal fold transepithelial water fluxes
K. V. Fisher, A. Telser, J. E. Phillips, and D. B. Yeates 1401

Activation of MAPK by modified low-density lipoproteins in vascular smooth muscle cells
V. Velarde, A. J. Jenkins, J. Christopher, T. J. Lyons, and A. A. Jaffa 1412

HIGHLIGHTED TOPICS

Signal Transduction in Smooth Muscle

Invited Review: cGMP-dependent protein kinase signaling mechanisms in smooth muscle: from the regulation of tone to gene expression
T. M. Lincoln, N. Dey, and H. Sellak 1421

Invited Review: The circle of life: cell cycle regulation in airway smooth muscle
A. J. Ammit and R. A. Panettieri, Jr. 1431

Invited Review: Mechanisms of calcium handling in smooth muscles
K. M. Sanders 1438

Commentary on Selected Contributions
G. C. Sieck 1450

Selected Contribution: Roles of focal adhesion kinase and paxillin in the mechanosensitive regulation of myosin phosphorylation in smooth muscle
D. D. Tang and S. J. Gunst 1452

Selected Contribution: HSP20 phosphorylation in nitroglycerin- and forskolin-induced sustained reductions in swine carotid media tone
C. M. Rembold, M. O'Connor, M. Clarkson, R. L. Wardle, and R. A. Murphy 1460

Selected Contribution: Synergism between TNF-α and IL-1β in airway smooth muscle cells: implications for β-adrenergic responsiveness
P. E. Moore, T. Lahiri, J. D. Laporte, T. Church, R. A. Panettieri, Jr., and S. A. Shore 1467

Selected Contribution: Insulin utilizes NO/cGMP pathway to activate myosin phosphatase via Rho inhibition in vascular smooth muscle
O. A. Sandu, M. Ito, and N. Begum 1475

LETTERS TO THE EDITOR

Methods for Averaging Respiratory Flow Profiles in Humans
G. Benchetrit; P. Robbins 1483

No. 4. OCTOBER 2001

EDITORIAL

Genome and hormones: an integrated approach to gender differences in physiology
G. C. Sieck 1485

INVITED REVIEWS

Cytoskeletal regulation of pulmonary vascular permeability
S. M. Dudek and J. G. N. Garcia 1487

HISTORICAL PERSPECTIVE

Historical aspects of the early Soviet/Russian manned space program
J. B. West 1501

Postexercise muscle glycogen resynthesis in obese insulin-resistant Zucker rats
C. R. Bruce, J. S. Lee, and J. A. Hawley 1512

Thermoregulatory and aerobic changes after endurance training in a hypobaric hypoxic and warm environment
Y. Takeno, Y.-I. Kamijo, and H. Nose 1520

Dehydration and body fluid-regulating hormones during sweating in warm (38°C) fresh- and seawater immersion
A. Hope, L. Aanderud, and A. Aakvaag 1529

Caffeine increases endurance and attenuates force sensation during submaximal isometric contractions
C. J. Plaskett and E. Cafarelli 1535

Glibenclamide improves postischemic recovery of myocardial contractile function in trained and sedentary rats
K. N. Jew and R. L. Moore 1545

Exposure to hypoxia produces long-lasting sympathetic activation in humans
A. Xie, J. B. Skatrud, D. S. Puleo, and B. J. Morgan 1555

Effects of volatile anesthetics on stiffness of mammalian ventricular muscle
A. E. Bartunek, V. A. Claes, and P. R. Housmans 1563

Protein kinase B/Akt activates c-Jun NH_2-terminal kinase by increasing NO production in response to shear stress
Y.-M. Go, Y. C. Boo, H. Park, M. C. Maland, R. Patel, K. A. Pritchard, Jr., Y. Fujio, K. Walsh, V. Darley-Usmar, and H. Jo 1574

P_{CO_2} threshold for CNS oxygen toxicity in rats in the low range of hyperbaric P_{O_2}
R. Arieli, G. Rashkovan, Y. Moskovitz, and O. Ertracht 1582

Influence of motoneuron firing synchronization on SEMG characteristics in dependence of electrode position
B. U. Kleine, D. F. Stegeman, D. Mund, and C. Anders 1588

A system to impose prescribed homogenous strains on cultured cells
C. M. Waters, M. R. Glucksberg, E. P. Lautenschlager, C.-W. Lee, R. M. Van Matre, R. J. Warp, U. Savla, K. E. Healy, B. Moran, D. G. Castner, and J. P. Bearinger 1600

Effect of C-fiber-mediated, ozone-induced rapid shallow breathing on airway epithelial injury in rats
E. S. Schelegle, M. F. Alfaro, L. Putney, M. Stovall, N. Tyler, and D. M. Hyde 1611

Nitric oxide and neurally mediated regulation of skin blood flow during local heating
C. T. Minson, L. T. Berry, and M. J. Joyner 1619

Enhanced in vivo and in vitro contractile responses to β_2-adrenergic receptor stimulation in dogs susceptible to lethal arrhythmias
M. S. Houle, R. A. Altschuld, and G. E. Billman 1627

Glycogen and glycogen phosphorylase associated with sarcoplasmic reticulum: effects of fatiguing activity
S. J. Lees, P. D. Franks, E. E. Spangenburg, and J. H. Williams 1638

Enhanced lung C-fiber responsiveness in sensitized adult guinea pigs exposed to chronic tobacco smoke
D. R. Bergren 1645

Major role for neuronal NO synthase in curtailing choroidal blood flow autoregulation in newborn pig
P. Hardy, D. Lamireau, X. Hou, I. Dumont, D. Abran, A.-M. Nuyt, D. R. Varma, and S. Chemtob 1655

Swim-trained rats have greater bone mass, density, strength, and dynamics
K. J. Hart, J. M. Shaw, E. Vajda, M. Hegsted, and S. C. Miller 1663

Cellular adaptation to repeated eccentric exercise-induced muscle damage
N. Stupka, M. A. Tarnopolsky, N. J. Yardley, and S. M. Phillips 1669

Baroreflex modulation of muscle sympathetic nerve activity during posthandgrip muscle ischemia in humans
J. Cui, T. E. Wilson, M. Shibasaki, N. A. Hodges, and C. G. Crandall 1679

Analysis of the harmonic content of the tidal flow waveforms in infants
U. Frey, M. Silverman, and B. Suki 1687

Ozone causes lipid peroxidation but little antioxidant depletion in exercising and nonexercising hamsters
N. C. Long, J. Suh, J. D. Morrow, R. H. Schiestl, G. G. K. Murthy, J. D. Brain, and B. Frei 1694

Normovolemic hemodilution improves oxygen extraction capabilities in endotoxic shock
J. Creteur, Q. Sun, O. Abid, D. De Backer, P. Van Der Linden, and J.-L. Vincent 1701

Strenuous exercise decreases the percentage of type 1 T cells in the circulation
A. Steensberg, A. D. Toft, H. Bruunsgaard, M. Sandmand, J. Halkjær-Kristensen, and B. K. Pedersen 1708

Fastigial nucleus-mediated respiratory responses depend on the medullary gigantocellular nucleus
F. Xu, T. Zhou, T. Gibson, and D. T. Frazier 1713

Orthostasis fails to produce active limb venoconstriction in adolescents
J. M. Stewart, J. Lavin, and A. Weldon 1723

Transport properties of alveolar epithelium measured by molecular hetastarch absorption in isolated rat lungs
R. L. Conhaim, K. E. Watson, S. J. Lai-Fook, and B. A. Harms 1730

Determination of regional ventilation and perfusion in the lung using xenon and computed tomography
T. C. Kreck, M. A. Krueger, W. A. Altemeier, S. E. Sinclair, H. T. Robertson, E. D. Shade, J. Hildebrandt, W. J. E. Lamm, D. A. Frazer, N. L. Polissar, and M. P. Hlastala 1741

Random walks, random sequences, and nonlinear dynamics in human optokinetic nystagmus
P. Trillenberg, C. Gross, and M. Shelhamer 1750

Lack of α_2-adrenergic antilipolytic effect during exercise in subcutaneous adipose tissue of trained men
I. De Glisezinski, F. Marion-Latard, F. Crampes, M. Berlan, J. Hejnova, J. M. Cottet-Emard, V. Stich, and D. Rivière 1760

Effects of hypoxia on alveolar fluid transport capacity in rat lungs
T. Sakuma, M. Hida, Y. Nambu, K. Osanai, H. Toga, K. Takahashi, N. Ohya, M. Inoue, and Y. Watanabe 1766

Influence of ribose on adenine salvage after intense muscle contractions
R. Zarzeczny, J. J. Brault, K. A. Abraham, C. R. Hancock, and R. L. Terjung 1775

Muscle glycogen depletion and subsequent replenishment affect anaerobic capacity of horses
V. A. Lacombe, K. W. Hinchcliff, R. J. Geor, and C. R. Baskin 1782

Women at altitude: ventilatory acclimatization at 4,300 m
S. R. Muza, P. B. Rock, C. S. Fulco, S. Zamudio, B. Braun, A. Cymerman, G. E. Butterfield, and L. G. Moore 1791

Effects of neutrophil elastase inhibitor (ONO-5046) on lung injury after intestinal ischemia-reperfusion
M. Takayama, M. Ishibashi, H. Ishii, T. Kuraki, T. Nishida, and M. Yoshida 1800

TGF-β_1 gene-race interactions for resting and exercise blood pressure in the HERITAGE Family Study
M. A. Rivera, M. Echegaray, T. Rankinen, L. Pérusse, T. Rice, J. Gagnon, A. S. Leon, J. S. Skinner, J. H. Wilmore, D. C. Rao, and C. Bouchard 1808

Decreased non-MHC-restricted ($CD56^+$) killer cell cytotoxicity after spaceflight
S. K. Mehta, I. Kaur, E. A. Grimm, C. Smid, D. L. Feeback, and D. L. Pierson 1814

PI3-kinase/Akt modulates vascular smooth muscle tone via cAMP signaling pathways
P. Komalavilas, S. Mehta, C. J. Wingard, D. T. Dransfield, J. Bhalla, J. E. Woodrum, J. R. Molinaro, and C. M. Brophy 1819

Effects of ovariectomy and estrogen on ischemia-reperfusion injury in hindlimbs of female rats
N. Stupka and P. M. Tiidus 1828

Comparison of lung protection strategies using conventional and high-frequency oscillatory ventilation
Y. Imai, S. Nakagawa, Y. Ito, T. Kawano, A. S. Slutsky, and K. Miyasaka 1836

INNOVATIVE TECHNIQUES

Local perfusion and metabolic demand during exercise: a noninvasive MRI method of assessment
R. S. Richardson, L. J. Haseler, A. T. Nygren, S. Bluml, and L. R. Frank 1845

HIGHLIGHTED TOPICS

Genome and Hormones: Gender Differences in Physiology

Historical Perspectives: An abridged history of sex steroid hormone receptor action
S. A. Fannon, R. M. Vidaver, and S. A. Marts 1854

Invited Review: Cell localization, physiology, and nongenomic actions of estrogen receptors
E. R. Levin 1860

Invited Review: Cardiovascular protective effects of 17β-estradiol metabolites
R. K. Dubey and E. K. Jackson 1868

Commentary on Selected Contributions
G. C. Sieck 1884

Selected Contribution: Estrogen receptor-α antisense decreases brain estrogen receptor levels and affects ventilation in male and female rats
S. R. Inamdar, K. M. Eyster, and E. H. Schlenker 1886

Selected Contribution: Sex differences in osmotic regulation of AVP and renal sodium handling
N. S. Stachenfeld, A. E. Splenser, W. L. Calzone, M. P. Taylor, and D. L. Keefe 1893

Selected Contribution: Gender differences in cardiovascular regulation during recovery from exercise
R. Carter III, D. E. Watenpaugh, and M. L. Smith 1902

LETTERS TO THE EDITOR

Nasal strips and EIPH in the exercising thoroughbred racehorse
C. A. Kindig, D. C. Poole, P. McDonough, and H. H. Erickson; T. E. Goetz, M. Manohar, and G. J. Baker 1908

No. 5. NOVEMBER 2001

EDITORIAL

Ethics, revisited
D. J. Benos 1911

Volume displaced by diaphragm motion in emphysema
B. Singh, P. R. Eastwood, and K. E. Finucane 1913

Exchange dynamics of nitric oxide in the human nose
D. C. Chambers, D. A. Carpenter, and J. G. Ayres 1924

Chemiluminescent measurements of nitric oxide pulmonary diffusing capacity and alveolar production in humans
I. B. Perillo, R. W. Hyde, A. J. Olszowka, A. P. Pietropaoli, L. M. Frasier, A. Torres, P. T. Perkins, R. E. Forster II, M. J. Utell, and M. W. Frampton 1931

Exposure to perflubron is associated with decreased Syk phosphorylation in human neutrophils
R. Fernandez, V. Sarma, E. Younkin, R. B. Hirschl, P. A. Ward, and J. G. Younger 1941

Pulmonary arterial dilation by inhaled NO: arterial diameter, NO concentration relationship
J. Bentley, D. Rickaby, S. T. Haworth, C. C. Hanger, and C. A. Dawson 1948

Reduction in hybrid single muscle fiber proportions with resistance training in humans
D. L. Williamson, P. M. Gallagher, C. C. Carroll, U. Raue, and S. W. Trappe 1955

Ventilatory behavior after hypoxia in C57BL/6J and A/J mice
F. Han, S. Subramanian, T. E. Dick, I. A. Dreshaj, and K. P. Strohl 1962

Bone-loading response varies with strain magnitude and cycle number
D. M. Cullen, R. T. Smith, and M. P. Akhter 1971

Pulmonary and bronchial circulations: contributions to heat and water exchange in isolated lungs
V. B. Serikov and N. W. Fleming 1977

Effect of acute exposure to hypergravity (G_X vs. G_Z) on dynamic cerebral autoregulation
J. M. Serrador, S. J. Wood, P. A. Picot, F. Stein, M. S. Kassam, R. L. Bondar, A. H. Rupert, and T. T. Schlegel 1986

Effects of tidal volume stretch on airway constriction in vivo
R. Brown and W. Mitzner 1995

Exercise-induced oxidative stress affects erythrocytes in sedentary rats but not exercise-trained rats
Ü. K. Şentürk, F. Gündüz, O. Kuru, M. R. Aktekin, D. Kipmen, Ö. Yalçin, M. Bor-Küçükatay, A. Yeşilkaya, and O. K. Başkurt 1999

Protective effects of estrogen on gender-specific development of diet-induced hypertension
C. K. Roberts, N. D. Vaziri, and R. J. Barnard 2005

Muscle chemoreflex elevates muscle blood flow and O_2 uptake at exercise onset in nonischemic human forearm
S. Perrey, M. E. Tschakovsky, and R. L. Hughson 2010

Perceived exertion is associated with an altered brain activity during exercise with progressive hyperthermia
L. Nybo and B. Nielsen 2017

NO_2 interfacial transfer is reduced by phospholipid monolayers
L. M. Connor, A. Bidani, J. Goerke, J. A. Clements, and E. M. Postlethwait 2024

Muscle fiber and tendon length changes in the human vastus lateralis during slow pedaling
T. Muraoka, Y. Kawakami, M. Tachi, and T. Fukunaga 2035

Sucrose diets increase glucose-6-phosphatase and glucose release and decrease glucokinase in hepatocytes
M. E. Bizeau, J. S. Thresher, and M. J. Pagliassotti 2041

Effect of endotoxin on oleic acid lung injury does not depend on priming
D. P. Schuster, J. K. Kozlowski, T. McCarthy, J. Morrow, and A. Stephenson 2047

Influence of aerobic fitness and body fatness on tolerance to uncompensable heat stress
G. A. Selkirk and T. M. McLellan 2055

Chronic administration of therapeutic levels of clenbuterol acts as a repartitioning agent
C. F. Kearns, K. H. McKeever, K. Malinowski, M. B. Struck, and T. Abe 2064

Skeletal muscle glycogen phosphorylase *a* kinetics: effects of adenine nucleotides and caffeine
J. W. E. Rush and L. L. Spriet 2071

Time course of the MAPK and PI3-kinase response within 24 h of skeletal muscle overload
C. J. Carlson, Z. Fan, S. E. Gordon, and F. W. Booth 2079

Gender difference in cardiovagal baroreflex gain in humans
S. D. Beske, G. E. Alvarez, T. P. Ballard, and K. P. Davy 2088

Activation of the arousal response and impairment of performance increase with anxiety and stressor intensity
J. T. Noteboom, K. R. Barnholt, and R. M. Enoka 2093

AMP-activated protein kinase activation prevents denervation-induced decline in gastrocnemius GLUT-4
S. R. Paulsen, D. S. Rubink, and W. W. Winder 2102

Duration of feeding on a sucrose-rich diet determines metabolic and morphological changes in rat adipocytes
A. Soria, M. E. D'Alessandro, and Y. B. Lombardo 2109

Nitric oxide affects sarcoplasmic calcium release in skeletal myotubes
L. M. A. Heunks, H. A. Machiels, P. N. R. Dekhuijzen, Y. S. Prakash, and G. C. Sieck 2117

Effect of carbohydrate ingestion on metabolism during running and cycling
M. J. Arkinstall, C. R. Bruce, V. Nikolopoulos, A. P. Garnham, and J. A. Hawley 2125

Comparison of oxygen uptake kinetics during concentric and eccentric cycle exercise
S. Perry, A. Betik, R. Candau, J. D. Rouillon, and R. L. Hughson 2135

Interleukin-6 response to exercise and high-altitude exposure: influence of α-adrenergic blockade
R. S. Mazzeo, D. Donovan, M. Fleshner, G. E. Butterfield, S. Zamudio, E. E. Wolfel, and L. G. Moore 2143

Estimating the size of the capillary-to-fiber interface in skeletal muscle: a comparison of methods
R. T. Hepple and O. Mathieu-Costello 2150

Prenatal nicotine affects catecholamine gene expression in newborn rat carotid body and petrosal ganglion
E. B. Gauda, R. Cooper, P. K. Akins, and G. Wu 2157

Relation of bone mineral density and content to mineral content and density of the fat-free mass
E. M. Evans, B. M. Prior, S. A. Arngrimsson, C. M. Modlesky, and K. J. Cureton 2166

Flow-independent nitric oxide exchange parameters in healthy adults
H.-W. Shin, C. M. Rose-Gottron, F. Perez, D. M. Cooper, A. F. Wilson, and S. C. George 2173

Bcl-2 mediates sex-specific differences in recovery of mice from LPS-induced signs of sickness independent of IL-6
Y. Tesfaigzi, K. Rudolph, M. J. Fischer, and C. A. Conn 2182

Regional expiratory flow limitation studied with Technegas in asthma
R. Pellegrino, A. Biggi, A. Papaleo, G. Camuzzini, J. R. Rodarte, and V. Brusasco 2190

Changes in cerebral oxygenation and blood flow during LBNP in spinal cord-injured individuals
S. Houtman, J. M. Serrador, W. N. J. M. Colier, D. W. Strijbos, K. Shoemaker, and M. T. E. Hopman 2199

Short-term exercise improves myocardial tolerance to in vivo ischemia-reperfusion in the rat
H. A. Demirel, S. K. Powers, M. A. Zergeroglu, R. A. Shanely, K. Hamilton, J. Coombes, and H. Naito 2205

Development of a novel, nonimmunogenic, soluble human TNF receptor type I (sTNFR-I) construct in the baboon
J. J. Rosenberg, S. W. Martin, J. E. Seely, O. Kinstler, G. C. Gaines, K. Fukuzuka, J. Rose, T. Kohno, W. J. Boyle, A. Nelson, G. L. Kieft, W. S. Marshall, U. Feige, J. Gasser, J. St. Clair, J. Frazier, A. Abouhamze, L. L. Moldawer, and C. K. Edwards III 2213

Long-term activity in upper- and lower-limb muscles of humans
D. S. Kern, J. G. Semmler, and R. M. Enoka 2224

Nitric oxide impairs Ca^{2+} activation and slows cross-bridge cycling kinetics in skeletal muscle
L. M. A. Heunks, M. J. Cody, P. C. Geiger, P. N. R. Dekhuijzen, and G. C. Sieck 2233

Impaired insulin-receptor autophosphorylation is an early defect in fat-fed, insulin-resistant rats
J. F. Youngren, J. Paik, and R. J. Barnard 2240

Influence of gender on upper airway mechanics: upper airway resistance and Pcrit
J. A. Rowley, X. Zhou, I. Vergine, M. A. Shkoukani, and M. S. Badr 2248

A theoretical model for oxygen transport in skeletal muscle under conditions of high oxygen demand
B. J. McGuire and T. W. Secomb 2255

Temporal aspects of excitation-contraction coupling in airway smooth muscle
G. C. Sieck, Y.-S. Han, C. M. Pabelick, and Y. S. Prakash 2266

No effects of oral ribose supplementation on repeated maximal exercise and de novo ATP resynthesis
B. Op 'T Eijnde, M. Van Leemputte, F. Brouns, G. J. Van Der Vusse, V. Labarque, M. Ramaekers, R. Van Schuylenberg, P. Verbessem, H. Wijnen, and P. Hespel 2275

No effect of mild heat stress on the regulation of carbohydrate metabolism at the onset of exercise
P. U. Saunders, M. J. Watt, A. P. Garnham, L. L. Spriet, M. Hargreaves, and M. A. Febbraio 2282

Negative pressure effects on mechanically opposing pharyngeal muscles in awake and sleeping goats
T. R. Feroah, H. V. Forster, L. Pan, N. E. Schlick, P. Martino, and T. Rice 2289

INVITED EDITORIAL

Fast breaths, slow breaths, small breaths, big breaths: importance of vagal innervation in the newborn lung
B. Thach 2298

Effects of vagal denervation on cardiorespiratory and behavioral responses in the newborn lamb
S. Lalani, J. E. Remmers, F. H. Green, A. Bukhari, G. T. Ford, and S. U. Hasan 2301

Maturational changes in extracellular matrix and lung tissue mechanics
R. Tanaka, R. Al-Jamal, and M. S. Ludwig 2314

Anorexic effect of K^+ channel blockade in mesenteric arterial smooth muscle and intestinal epithelial cells
S. S. McDaniel, O. Platoshyn, Y. Yu, M. Sweeney, V. A. Miriel, V. A. Golovina, S. Krick, B. R. Lapp, J.-Y. Wang, and J. X.-J. Yuan 2322

Effect of weight bearing on recovery from nerve injury in skeletal muscle
T. Matsuura, T. Ikata, S. Takata, S. Kashiwaguchi, M. Niwa, T. Sogabe, and K. Koga 2334

Microinjection of acetazolamide into the fastigial nucleus augments respiratory output in the rat
F. Xu, Z. Zhang, and D. T. Frazier 2342

Increases in intramuscular pressure raise arterial blood pressure during dynamic exercise
K. M. Gallagher, P. J. Fadel, S. A. Smith, K. H. Norton, R. G. Querry, A. Olivencia-Yurvati, and P. B. Raven 2351

Peripheral vascular resistance increases after termination of obstructive apneas
A. Anand, S. Remsburg-Sailor, S. H. Launois, and J. W. Weiss 2359

HIGHLIGHTED TOPICS

Genome and Hormones: Gender Differences in Physiology

Invited Review: Sex ratio and rheumatic disease
M. D. Lockshin 2366

Invited Review: Gender issues related to spaceflight: a NASA perspective
D. L. Harm, R. T. Jennings, J. V. Meck, M. R. Powell, L. Putcha, C. P. Sams, S. M. Schneider, L. C. Shackelford, S. M. Smith, and P. A. Whitson 2374

Invited Review: Sex-based differences in gene expression
H. Ostrer 2384

Commentary on Selected Contributions
G. C. Sieck 2389

Selected Contribution: Cerebrovascular NOS and cyclooxygenase are unaffected by estrogen in mice lacking estrogen receptor-α
G. G. Geary, A. M. McNeill, J. A. Ospina, D. N. Krause, K. S. Korach, and S. P. Duckles 2391

Selected Contribution: Estrogen receptor-α gene transfer inhibits proliferation and NF-κB activation in VSM cells from female rats
R. V. Sharma, M. V. Gurjar, and R. C. Bhalla 2400

Selected Contribution: Gender differences in the endothelin-B receptor contribution to basal cutaneous vascular tone in humans
D. L. Kellogg, Jr., Y. Liu, and P. E. Pérgola 2407

LETTERS TO THE EDITOR

Carbon Dioxide Pressure-Concentration Relationship in Arterial and Mixed Venous Blood
S. Godfrey; H. Kazemi, D. Systrom; K. Wasserman, X.-G. Sun, J. E. Hansen, H. Ting, and W. W. Stringer 2412

No. 6. DECEMBER 2001

INVITED REVIEW

Vascular adaptation to microgravity: what have we learned?
L.-F. Zhang 2415

From Belfast to Mayo and beyond: the use and future of plethysmography to study blood flow in human limbs
M. J. Joyner, N. M. Dietz, and J. T. Shepherd 2431

Extravascular lung water in the exercising horse
P. A. Wilkins, R. D. Gleed, N. M. Krivitski, and A. Dobson 2442

Cervical spinal cord injury alters the pattern of breathing in anesthetized rats
F. J. Golder, P. J. Reier, P. W. Davenport, and D. C. Bolser 2451

Supine position decreases the ability of the nose to warm and humidify air
P. Assanasen, F. M. Baroody, E. Naureckas, J. Solway, and R. M. Naclerio 2459

Age does not influence muscle fiber length adaptation to increased excursion
T. J. Burkholder 2466

Biomechanical response to acupuncture needling in humans
H. M. Langevin, D. L. Churchill, J. R. Fox, G. J. Badger, B. S. Garra, and M. H. Krag 2471

Myosin cross bridges in skeletal muscles: "rower" molecular motors
Y. Lecarpentier, D. Chemla, J. C. Pourny, F.-X. Blanc, and C. Coirault 2479

Influence of isometric exercise on blood flow and sweating in glabrous and nonglabrous human skin
A. R. Saad, D. P. Stephens, L. A. T. Bennett, N. Charkoudian, W. A. Kosiba, and J. M. Johnson 2487

Dynamic cerebral autoregulation is preserved in neurally mediated syncope
R. Schondorf, R. Stein, R. Roberts, J. Benoit, and W. Cupples 2493

Gender influences coronary L-type Ca^{2+} current and adaptation to exercise training in miniature swine
D. K. Bowles 2503

Bronchoprotective and bronchodilatory effects of deep inspiration in rabbits subjected to bronchial challenge
S. J. Gunst, X. Shen, R. Ramchandani, and R. S. Tepper 2511

Changes in microvascular fluid filtration capacity during 120 days of 6° head-down tilt
F. Christ, J. Gamble, V. Baranov, A. Kotov, A. Chouker, M. Thiel, I. B. Gartside, C. M. Moser, J. Abicht, and K. Messmer 2517

Integrated analysis of protein and glucose metabolism during surgery: effects of anesthesia
T. Schricker, R. Lattermann, P. Fiset, L. Wykes, and F. Carli 2523

Left ventricular wave speed
J.-J. Wang, K. H. Parker, and J. V. Tyberg 2531

Inspired CO_2 and O_2 in sleeping infants rebreathing from bedding: relevance for sudden infant death syndrome
A. L. Patel, K. Harris, and B. T. Thach 2537

Inhibitory effects of voluntary wheel exercise on apoptosis in splenic lymphocyte subsets of C57BL/6 mice
C. P. R. Avula, A. R. Muthukumar, K. Zaman, R. McCarter, and G. Fernandes 2546

Regulation of the nitric oxide synthase-nitric oxide- cGMP pathway in rat mesenteric endothelial cells
A. Papapetropoulos, S. Andreopoulos, C. Y. Go, A. Hoque, L. C. Fuchs, and J. D. Catravas 2553

Effect of estrogen on flow-induced dilation in NO deficiency: role of prostaglandins and EDHF
A. Huang, Y. Wu, D. Sun, A. Koller, and G. Kaley 2561

Bronchial edema alters ^{99m}Tc-DTPA clearance from the airway surface in sheep
W. Foster and E. M. Wagner 2567

Airway response to deep inspiration: role of inflation pressure
R. H. Brown and W. Mitzner 2574

Erythropoiesis in women during 11 days at 4,300 m is not affected by menstrual cycle phase
J. T. Reeves, S. Zamudio, T. E. Dahms, I. Asmus, B. Braun, G. E. Butterfield, R. G. McCullough, S. R. Muza, P. B. Rock, and L. G. Moore 2579

Methacholine versus histamine: paradoxical response of spirometry and ventilation distribution
S. Verbanck, D. Schuermans, M. Noppen, W. Vincken, and M. Paiva 2587

Differences between inhaled and intravenous bronchial challenge to detect O_3-induced hyperresponsiveness
B. Sommer, M. H. Vargas, J. Chavez, V. Carbajal, P. Segura, and L. M. Montaño 2595

Androgen-receptor defect abolishes sex differences in nitric oxide and reactivity to vasopressin in rat aorta
J. N. Stallone, R. L. Salisbury, and C. T. Fulton 2602

Gender differences in autonomic cardiovascular regulation: spectral, hormonal, and hemodynamic indexes
J. M. Evans, M. G. Ziegler, A. R. Patwardhan, J. B. Ott, C. S. Kim, F. M. Leonelli, and C. F. Knapp 2611

Reduced submaximal leg blood flow after high-intensity aerobic training
D. N. Proctor, J. D. Miller, N. M. Dietz, C. T. Minson, and M. J. Joyner 2619

Activation of human quadriceps femoris during isometric, concentric, and eccentric contractions
N. Babault, M. Pousson, Y. Ballay, and J. Van Hoecke 2628

Effect of epinephrine on net lactate uptake by contracting skeletal muscle
J. J. Hamann, K. M. Kelley, and L. B. Gladden 2635

Multiple mechanisms of reflex bronchospasm in guinea pigs
B. J. Canning, S. M. Reynolds, and S. B. Mazzone 2642

Effect of aging on fatigue characteristics of elbow flexor muscles during sustained submaximal contraction
M. Bilodeau, T. K. Henderson, B. E. Nolta, P. J. Pursley, and G. L. Sandfort 2654

Serotonin$_2$ receptors mediate respiratory recovery after cervical spinal cord hemisection in adult rats
S.-Y. Zhou, G. J. Basura, and H. G. Goshgarian 2665

NO inhalation reduces pulmonary arterial pressure but not hemorrhage in maximally exercising horses
C. A. Kindig, P. McDonough, M. R. Finley, B. J. Behnke, T. E. Richardson, D. J. Marlin, H. H. Erickson, and D. C. Poole 2674

Skeletal muscle intracellular P_{O_2} assessed by myoglobin desaturation: response to graded exercise
R. S. Richardson, S. C. Newcomer, and E. A. Noyszewski 2679

Sex differences in the fatigability of arm muscles depends on absolute force during isometric contractions
S. K. Hunter and R. M. Enoka 2686

Time course of myocardial sodium accumulation after burn trauma: a ^{31}P- and ^{23}Na-NMR study
P. J. Sikes, P. Zhao, D. L. Maass, and J. W. Horton 2695

Serotonin elicits long-lasting enhancement of rhythmic respiratory activity in turtle brain stems in vitro
S. M. Johnson, J. E. R. Wilkerson, D. R. Henderson, M. R. Wenninger, and G. S. Mitchell 2703

Increasing activity of H_2-metabolizing microbes lowers decompression sickness risk in pigs during H_2 dives
S. R. Kayar, A. Fahlman, W. C. Lin, and W. B. Whitman 2713

On the likelihood of decompression sickness during H_2 biochemical decompression in pigs
A. Fahlman, P. Tikuisis, J. F. Himm, P. K. Weathersby, and S. R. Kayar 2720

Overexpression of TGF-α increases lung tissue hysteresivity in transgenic mice
J. J. Pillow, T. R. Korfhagen, M. Ikegami, and P. D. Sly 2730

Electro-hydrodynamic atomization of drug solutions for inhalation purposes
J. C. Ijsebaert, K. B. Geerse, J. C. M. Marijnissen, J. J. Lammers, and P. Zanen 2735

Testosterone-induced relaxation of rat aorta is androgen structure specific and involves K^+ channel activation
A. Q. Ding and J. N. Stallone 2742

Long-term facilitation in obstructive sleep apnea patients during NREM sleep
S. E. Aboubakr, A. Taylor, R. Ford, S. Siddiqi, and M. S. Badr 2751

INNOVATIVE TECHNIQUES

A model of sleep-disordered breathing in the C57BL/6J mouse
Y. Tagaito, V. Y. Polotsky, M. J. Campen, J. A. Wilson, A. Balbir, P. L. Smith, A. R. Schwartz, and C. P. O'Donnell 2758

Flowmetric comparison of respiratory inductance plethysmography and pneumotachography in horses
A. Hoffman, H. Kuehn, K. Riedelberger, R. Kupcinskas, and M. B. Miskovic 2767

HIGHLIGHTED TOPICS

Genome and Hormones: Gender Differences in Physiology

Invited Review: Pharmacogenetics of estrogen replacement therapy
D. M. Herrington and K. P. Klein 2776

Invited Review: Estrogens effects on the brain: multiple sites and molecular mechanisms
B. S. McEwen 2785

Commentary on Selected Contributions
G. C. Sieck 2802

Selected Contribution: Association of gender-related LMP2 inactivation with autoimmune pathogenesis
T. Hayashi and D. L. Faustman 2804

Selected Contribution: Effects of gender on reduced-size liver ischemia and reperfusion injury
H. Harada, K. P. Pavlick, I. N. Hines, J. M. Hoffman, S. Bharwani, L. Gray, R. E. Wolf, and M. B. Grisham 2816

Selected Contribution: Effects of sex and ovariectomy on responses to platelets in porcine femoral veins
D. A. Lewis, M. P. Bracamonte, K. S. Rud, and V. M. Miller 2823

Selected Contribution: Time-dependent hypoxic respiratory responses in female rats are influenced by age and by the estrus cycle
A. G. Zabka, M. Behan, and G. S. Mitchell 2831